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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/396,470	09/15/1999	EUEE-SEON JANG	030681-152	7479

21839 7590 01/11/2006

BUCHANAN INGERSOLL PC
(INCLUDING BURNS, DOANE, SWECKER & MATHIS)
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER

SENF, BEHROOZ M

ART UNIT	PAPER NUMBER
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2613

DATE MAILED: 01/11/2006

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/396,470
Filing Date: September 15, 1999
Appellant(s): JANG ET AL.

MAILED

JAN 11 2006

Technology Center 2600

Martin E. Miller
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 10/3/2005 appealing from the Office action mailed 01/03/2005.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

The examiner is not aware of any related appeals, interferences, or judicial proceedings, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) *Status of Claims*

The statement of the status of claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Claimed Subject Matter*

The summary of claimed subject matter contained in the brief is correct.

(6) *Grounds of Rejection to be Reviewed on Appeal*

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) *Claims Appendix*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,438,266

BAJAJ et al

08-1998

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Bajaj et al. (US 6,438,266) for the same reason as stated in previous office action (paper no. 18, dated 3/8/2004).

Regarding claim 2, Bajaj discloses, progressive 3-D mesh information coding (i.e. fig. 10), and dividing a 3-D mesh into a plurality of mesh components, wherein each of the mesh components corresponds to a different partition of the 3-D mesh (i.e. fig. 3a – 3c and figs. 19 – 21, col. 4, lines 5 – 11, col. 10, layer decomposition), and coding each of the plurality of mesh components (i.e. figs. 1, and 10, encoder 14, col. 3, lines 60 – col. 4, lines 5 and col. 6, lines 20 - 30) and multiplexing the plurality of code mesh components into a compressed bit stream and transmitting the compressed bit stream, (as discussed above, 3-D mesh being divided into layer and further into contours and

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vertices/isolated vertices, which are being encoded to create a bit-stream for transmission purpose, therefore multiplexing is necessitated by the process, also please see fig. 10, combine Encoding), and wherein each of the plurality of mesh components includes at least connectivity information, geometry information which are necessary to reconstruct the coded mesh component, (fig. 31, abstract lines 4 – 7 and col. 9, lines 55 - col. 10, lines 20 and attributes data, such as “position, color, normals” fig. 32, col. 14, lines 62 - 65. Note: Applicant fails to explicitly define the “Photometry information” in the specification.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 1, 3 – 7, 10, 12 – 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bajaj et al. (US 6,438,266).

Regarding claim 1, Bajaj teaches, progressive 3-D mesh information coding (figs 1 and 10, encoder 14), dividing a 3-D mesh into a plurality of mesh components, wherein each of the mesh components corresponds to a different partition of the 3-D mesh (fig. 3a – 3c, figs. 19 – 21 and col. 4, lines 5 – 11, col. 10, layer decomposition), and coding each of the plurality of mesh components, wherein the plurality of coded mesh components are capable of being decoded and incrementally reproduced as unit mesh parts of the 3-D mesh (col. 1, lines 45 – 48, col. 4, lines 37 – 55 and col. 6, lines

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20 - 30) teaches, encoded bit stream are being transmitted incrementally, to the receiver side, and the receiver should be able to incrementally decode the received information, since the decoding is a reverse process of encoding, and multiplexing the plurality of code mesh components into a compressed bit stream and transmitting the compressed bit stream (as discussed above, 3-D mesh being divided into layer and further into contours and vertices/isolated vertices, which are being encoded to create a bit-stream for transmission purpose, therefore multiplexing is necessitated by the process, also see fig. 10, combine Encoding).

Bajaj reference is silent in regards to explicitly mention, mesh component are capable of being "independently decoded".

However, Bajaj reference (col. 4, lines 4 – 23, 37 – 55 and col. 6, lines 22 - 23) teaches, layer decomposition, to vertices and each vertex layer further divided into contours and isolated vertices, which are being encoded independently and being transmitted to the receiver side (fig. 1, 18), which also supports incremental transmission.

It would have been obvious to one skilled in the art that, "decoding" is a reverse process of encoding; therefore the decoder (18) is capable of independent processing, of the received information, for reconstruction of the 3-D mesh object and display on the display monitor (fig. 1, 19).

Regarding claim 5, Bajaj teaches, decomposing the bit streams into contours and dividing contours into plurality of mesh component, wherein the plurality of mesh components are capable of being incrementally reproduced as unit mesh parts of the 3-

D mesh (i.e. figs. 3a – 3c and 19 – 21, col. 4, lines 5 – 11, col. 6, lines 22 – 30 and col. 10, layer decomposition).

Bajaj reference is silent in regards to explicitly mention, reconstruction by “synthesizing”.

As discussed with respect to claim 1, it would have been obvious to one skilled in the art that, “decoding” is a reverse process of encoding (see fig. 1, 14, and 18), which would decode the transmitted data from the encoder to construct the 3-D mesh object, for displaying on the display monitor. Therefore, based on the claim language, compositing the decoded image data must be done by the decoder in order to reconstruct/synthesize the image for display on the display monitor.

Regarding claim 10, the limitations claimed have been analyzed and rejected with respect to claims 1 and 5. Furthermore, the additional limitations “extracting” one or more object layers from 3-D mesh and dividing each of the mesh object layers, reads on decomposition of 3-D mesh object as taught by Bajaj (col. 4, 8 – 11 and col. 10, lines 33 – 40).

Regarding claim 15, the limitations claimed have been analyzed and rejected with respect to claim 5.

Regarding claim 3, the limitations, extracting one or more mesh object layers from 3-D mesh and dividing the one or more mesh object layers, have been analyzed and rejected with respect to claims 1 and 10.

Regarding claims 4, 7, 14 and 16, it is noted that, Bajaj reference is silent in regards to “reusing the coded information, in the process for coding a mesh component

which has not yet been coded.

However, Official Notice is taken to note that, the above features are common knowledge and notoriously well known in the prior art of coding/decoding process, which reusing the (coded) information is especially useful to speed up the process of (compression) coding/decoding.

Regarding claim 6, the limitations claimed have been analyzed and rejected with respect to claim 5. Furthermore, as for "classifying", please see (col. 10, lines 33 – 40).

Regarding claim 12, the limitations, a plurality of component coders for coding the plurality of mesh components, reads on processor, which independently process the mesh components (fig. 2, processor 2, col. 4, lines 4 – 23, 37 – 55 and col. 6, lines 22 – 23), and as for multiplexing; Bajaj teaches, 3-D mesh being divided into layer and further into contours and vertices/isolated vertices, which are being encoded/compressed to create a compressed bit-stream for transmission purpose, therefore multiplexing the mesh components to have a compressed bit stream for transmission is necessitated by the process, and 3-D "data analyzer" for receiving a 3-d mesh; the functionality of the analyzer as claimed, is to receiving 3-d mesh and divide the input 3-D mesh into plurality of mesh components, which is similar to decomposition process of Bajaj (col. 4, lines 8 – 11).

Bajaj reference is silent in regards to explicitly mention, mesh components are capable of being "incrementally reproduced."

Bajaj teaches dividing a 3-D mesh into layer and layer further being divided into contours and isolated vertices/mesh components (figs. 19 – 21 of Bajaj), which are

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being encode to create a bit stream for transmission purpose, and as stated in (col. 1, lines 45 – 48, and col. 4, lines 37 – 55 and col. 6, lines 22 – 29 of Bajaj) encoded bit stream are being transmitted incrementally. Therefore, based on the above teaching, it would have been obvious to one skilled in the art that, since the transmission is increment. Technically decoder (fig. 1, 18) is affected by the incremental transmission of the data and would process whatever information received from the server/transmitter side (fig. 1, 14) based upon, in order to reproduce the 3-d mesh data to display on the display monitor (19).

Regarding claim 13, the limitations claimed have been analyzed and rejected with respect to claim 12. Furthermore, plurality of mesh component “analyzer for again dividing each of one or more mesh object layers” reads on Bajaj (col. 4, lines 8 – 11).

Regarding claim 19, the limitations claimed have been analyzed and rejected with respect to claim 12. Furthermore, “wherein each of the plurality of coded mesh components include information necessary such that, when decoded, is capable of being rendered as a unit mesh part of the 3-D mesh” have been analyzed and rejected with respect to claim 2.

(10) Response to Argument

Appellant alleges (page 5, lines 1 – 17 of Brief) that, the rejection of claim 2 under 35 102(e) is in error insofar as the Bajaj et al patent (US 6,438,266, hereinafter “the Bajaj patent”) is not prior art.

In Response, it is unclear for the examiner as to whether the Appellant tries to challenge the effective filing date of the 102(e) with respect to the provisional application 60/098,150, or any discrepancies in regards to the provisional application.

It should be noted that all subject matters disclosed in the US Patent 6,438,266 are supported by the provisional application no. 60/098,150, filed on Aug. 1998.

Appellant alleges (page 5, lines 20 – 21, and page 8, lines 13) that, Bajaj patent does not disclose “photometry information data as recited in claim 2”.

In Response, as stated in the Appellants, “Description of the preferred embodiments” (page 6 of specification), mesh component includes connectivity information, geometry information, and other data such as photometry information, which lacks to explicitly define and limit the photometry information. Bajaj patent discloses connectivity information and geometry information, (col. 9, lines 55 and col. 10, lines 15 of Bajaj patent, and abstract, lines 11 of Bajaj priority document), and (pages 13 and 94 of the provisional application 60/098,150, where discloses use of “other attribute data”, like “color, normals and texture), and also (fig. 32 of Bajaj patent, col. 2, lines 14 – 15, “where discloses coding includes the position and attributes data, and col. 14, lines 62 – 65, discloses coding includes, position, color, normals and more) where the attribute data, color and position, are considered as photometry information.

Appellant alleges (pages 5 - 6, lines 23 - 14) that, Bajaj priority document does not teach or suggest, “dividing a transmitted bit stream into a plurality of coded mesh components, wherein the plurality of mesh components are capable of being incrementally reproduced as unit mesh parts of a 3-D mesh.” Furthermore; alleges, as

pointed out above, the Bajaj priority document does not provide support for much of the Bajaj patent disclosure relied upon in the rejection.

In Response, Appellant argument is not persuasive. As pointed out above, the subject matters disclosed by Bajaj patent are thoroughly supported by the Bajaj priority document. Furthermore, Bajaj patent teaches dividing a 3-D mesh into layer and layer further being divided into contours and isolated vertices/mesh components (figs. 19 – 21 of Bajaj patent and also the same figures in Bajaj priority document, that are similar to fig. 2, of the Appellant), which are being encoded to create a bit stream for transmission purpose, and as stated in (col. 1, lines 45 – 48, and col. 4, lines 37 – 55 and col. 6, lines 22 – 29 of Bajaj) encoded bit stream are being transmitted incrementally, therefore the receiver should be able to incrementally decode/reproduce and display the information it has received from the transmission side.

Appellant alleges (page 6, lines 15 - 24) that, Bajaj priority document concentrates on attempting to improve efficiency in the encoding of connectivity, geometry data and multi-resolution meshes. It is not, however, concerned with solving problems addressed by embodiments of the present invention, which include inefficiency problems related to error occurrences during transmission of mesh data, and incremental transmission and reproduction of independent mesh object layers.

In Response, Appellant argument is not persuasive. It is noted that Bajaj patent is related to improving the coding efficiency. However, “inefficiency problems related to error occurrences during transmission of mesh data” as alleged by applicant is not claimed. Therefore, the arguments are not persuasive.

Appellant alleges (page 9, lines 11) that, Bajaj patent fails to disclose, "unit mesh parts decoding and reproduction."

In Response, examiner respectfully disagrees. As discussed earlier, Bajaj patent discloses dividing a 3-D mesh into layer and layer further being divided into contours and isolated vertices/mesh component (figs. 19 – 21 of Bajaj patent and also the same figures in Bajaj priority document, which are similar to fig. 2, of the Appellant), which are being encode to create a bit stream for transmission purpose, and as stated in (col. 1, lines 45 – 48, col. 4, lines 38 – 55 and col. 6, lines 22 – 29 of Bajaj patent) encoded bit stream are being transmitted incrementally, therefore the receiver should be able to decode/reproduce and display whatever information it has received from the transmission side.

Appellant alleges (page 10, part C) that, the rejection of claims 1, 3-6, 10, 12-15 and 19 under 35 U.S.C. 103 is in error insofar as the Bajaj patent is not prior art.

In Response, with respect to the above discussion and explanation, Appellant arguments are not persuasive.

Appellant alleges (page 11, part D, and page 12, no. 2 and whole page 13) that, the rejection of claims 1, 3-6, 10, 12-15 and 19 under 35 U.S.C. 103 is improper.

Examiner respectfully disagrees. Because, Bajaj patent (i.e. fig. 1, 14) teaches encoder for encoding 3-D object mesh and independently encoding, contours, vertex and triangle (col. 4, lines 4 – 5), and transmitting the encoded data to the receiver/decoder side (fig. 1, 18). It would have been obvious to one skilled in the art,

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that the decoder is capable of decoding the received information from the encoder side, in order to display the 3-D object mesh on the display monitor 19 (col. 1, lines 46 – 48).

Appellant alleges (page 14, sections 4 and 5), that step of “classifying” and “3-D analyzer” not disclosed.

Examiner respectfully disagrees. The “classifying” reads on (col. 10, lines 33 – 40) of Bajaj patent, and as for “3-D analyzer”, the functionality of the analyzer as claimed, is to divide the input 3-D mesh into one or more mesh object layer and again dividing each of one or more mesh object layers into mesh components, which is similar to decomposition process of Bajaj patent (col. 4, lines 8 – 11).

Appellant alleges (page 15, claim 13) that, the Bajaj patent fails to teach, mash component analyzers for again dividing each one of the one or more mash object layers into plurality of mesh components.

Examiner respectfully disagrees. The functionality of analyzer is to divide the mesh object layer further to mesh components, which is similar to decomposition process of Bajaj patent (col. 4, lines 8 – 11).

Appellant alleges (page 15, Part 6) that, Bajaj priority document provides no support for rejections. For instance, Bajaj patent fails to teach, the step of extracting one or more mesh object layers from 3-D mesh and dividing each of the mesh object layers into a plurality of independent mesh components.

Examiner respectfully disagrees. Appellant's argument is similar to the arguments with respect to claim 13 above. Examiner note that, Bajaj priority document thoroughly supports the disclosure of the Bajaj patent as previously discussed.

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Furthermore, the step of "extracting one or more mesh object layers from 3-D mesh" reads on the decomposition of the 3-D mesh object as taught by Bajaj patent (col. 4, lines 8 – 11 and col. 10, lines 33 – 40).

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Behrooz Senfi



Examiner

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Conferees:

MEHRDAD DASTOURI
SUPERVISORY PATENT EXAMINER

Mehrdad Dastouri



Chris Kelley

PATENT LEGAL STAFF



CHRIS KELLEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600